

CLAIMS:

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

- 1 1. A computer device comprising:
 - 2
 - 3 a projecting device for displaying a graphical representation of a keyboard, said
 - 4 graphical representation including key locations capable of being selected by an
 - 5 object, said graphical image displayed in an area proximate said device;
 - 6
 - 7 a signal detection system for detecting the presence of an object located at a selected
 - 8 key location within said area; and,
 - 9
 - 10 mechanism for determining the selected key in response to detecting an object at a
 - 11 corresponding selected key location and registering said selected key as a keystroke in
 - 12 said computing device.
- 1 2. The computer device according to Claim 1, wherein said signal detection
- 2 system is capable of detecting objects at locations within said limited range defined by
- 3 said graphical representation.
- 1 3. The computer device according to Claim 2, wherein said signal detection
- 2 system includes a radar device for detecting the location of objects within said limited
- 3 range.
- 1 4. The computer device according to Claim 2, wherein said signal detection
- 2 system includes a laser generator and photodetector device for detecting the location
- 3 of objects within said limited range.

1 5. The computer device according to Claim 2, wherein said signal detection
2 system includes an electromagnetic signal transmitter means for iteratively
3 transmitting series of electromagnetic signals sweeping said limited range, and
4 receiving electromagnetic signal reflections from detected objects, wherein said
5 electromagnetic signal transmitter means is located a predetermined distance away
6 from said graphical representation.

1 6. The computer device according to Claim 5, wherein said determining
2 mechanism includes: means for calculating a distance between said electromagnetic
3 signal transmitter means and said detected object; and means for determining a current
4 iteration of said series of electromagnetic signals, wherein said key is determined
5 according to said distance and said current iteration.

1 7. The computer device according to Claim 5, wherein said means for calculating
2 a distance between said electromagnetic signal transmitter means and said detected
3 object includes means for determining an elapsed time between transmission of said
4 electromagnetic signal and receipt of its corresponding reflected signal.

1 8. The computer device according to Claim 5, further comprising memory means
2 comprising a mapping of valid selectable key strokes according to calculated distances
3 and electromagnetic signal pulse iteration.

1 9. The computer device according to Claim 5, further comprising leg means for
2 adjusting a vertical and angular orientation of said projecting and signals detection
3 devices with respect to a surface, said adjusting mechanism for adjusting a range of
4 said series of electromagnetic signals according to a projected display.

1 10. The computer device according to Claim 1, wherein an object includes a finger
2 of a user of said computer device.

1 11. The computer device according to Claim 5, further comprising means for
2 customizing content of said virtual keys provided in the graphical representation of
3 said keyboard.

1 12. A computer device comprising:

2
3 a projecting device for displaying one of: a screen image or portion of a screen image
4 display, said screen image including displayed items capable of being selected by an
5 object;

6
7 a signal detection system for detecting the presence of an object located at a selected
8 item location; and,

9
10 mechanism for determining the selected item in response to detecting an object at a
11 corresponding selected key location.

1 13. The computer device according to Claim 12, wherein said signal detection
2 system is capable of detecting objects at locations within a limited range defined by
3 said graphical representation.

1 14. The computer device according to Claim 13, wherein said signal detection
2 system includes a radar device for detecting the location of objects within said limited
3 range.

1 15. A method for providing input to a computer device comprising the steps of:

2
3 a) displaying a graphical representation of a keyboard image,
4 said graphical representation including key locations capable of being selected by an
5 object, said graphical image displayed in a limited area proximate said device;

6

7 b) detecting the presence of an object located at a selected key location; and,
8
9 c) determining the selected key in response to detecting an object at a corresponding
10 selected key location.

1 16. The method according to Claim 15, wherein said detecting step includes the
2 steps of:

3
4 iteratively transmitting series of electromagnetic signals for sweeping said limited
5 area, a transmitter of said electromagnetic signals being provided at a limited distance
6 away from said graphical representation;

7
8 receiving via a receiver device electromagnetic signal reflections from an object
9 positioned within said limited area.

1 17. The method according to Claim 16, wherein said selected key determining step
2 comprises the steps of:

3
4 calculating a distance between said electromagnetic signal transmitter and said
5 detected object; and,

6
7 determining a current iteration of said series of electromagnetic signals, wherein said
8 key is determined according to said distance and said current iteration.

1 18. The method according to Claim 17, wherein said calculating step includes the
2 step of determining an elapsed time between transmission of said electromagnetic
3 signal and receipt of its corresponding reflected signal.

1 19. The method according to Claim 17, further including the step of: providing a
2 mapping of valid selectable key strokes according to calculated distances and
3 electromagnetic signal pulse iteration.

1 20. The method according to Claim 16, wherein prior to iteratively transmitting
2 series of electromagnetic signals for sweeping said limited area, the step of
3 positioning the transmitter device to thereby restrict electromagnetic signal sweep
4 range.

1 21. The method according to Claim 16, wherein after determination step c), the
2 step of registering said selected key as a keystroke in said computing device.

1 22. The method according to Claim 16, wherein after determination step c), the
2 step of notifying a user of a key being selected in said projected display, said notifying
3 including one or more of: changing a color or dimension of the selected virtual key.